**BIOPHYSICS**

1. **DESCRIPTION:** Participants will be tested on their knowledge of biology and physics, and their ability to apply physics to biological problems.

**A TEAM OF UP TO:** 2 **APPROXIMATE TIME/EVENT TIME:** 50 minutes

1. **EVENT PARAMETERS:**
   1. Each team may bring one 8.5” x 11” sheet of paper that may contain information on both sides in any form and from any source.
   2. Each team may bring two stand-alone calculators of any type dedicated to computation to use during the event.
   3. The Event Supervisor will provide a physics equation and constants sheet.

<https://secure-media.collegeboard.org/digitalServices/pdf/ap/physics-c-tables-and-equations-list.pdf>

1. **THE COMPETITION:**
   1. This event will test participants’ knowledge of biology and physics.
   2. Biology topics may include but are not limited to:
      1. Animal and plant physiology
      2. Molecular and cell biology
      3. Biotechnology
   3. Physics topics may include but are not limited to:
      1. Mechanics
      2. Fluids
      3. Electricity and magnetism
2. **SAMPLE TASKS/STATIONS/QUESTIONS**:
   1. Consider a blood transfusion via IV catheter. Given pressure, viscosity, length, and target flow rate, determine the radius of the catheter required.
   2. If the fluid were Ringer’s lactate solution instead of blood, by how much would the flow rate be increased or decreased? Ringer’s lactate solution is 4 times less viscous than blood.
3. **SCORING:**
   1. The highest score wins. All questions will be assigned a predetermined number of points.
   2. Selected questions will be used to break ties.
   3. Time will not be a tie breaker.
4. **RECOMMENDED RESOURCES:** 
   1. Campbell Biology
   2. Hyperphysics (<http://hyperphysics.phy-astr.gsu.edu/hbase/index.html>)